INDUSTRIAL STANDARDIZATION

and Commercial Standards Monthly

ASA

Published by the
AMERICAN STANDARDS ASSOCIATION
with the cooperation of the
NATIONAL BUREAU OF STANDARDS

VOLUME 4 DECEMBER • 1933 NUMBER 12

AMERICAN STANDARDS ASSOCIATION
29 West Thirty-Ninth Street New York

ASA Member-Bodies

Am. Gas Association
Am. Home Economics Assn.
Am. Institute of Elec. Engineers
Am. Institute of Mining & Metallurgical Engineers
Am. Railway Association
Am. Soc. of Civil Engineers
Am. Soc. of Mechanical Engrs.
Am. Soc. of Sanitary Engineering
Am. Soc. for Testing Materials
Am. Transit Association
Assn. of Am. Steel Manufacturers
Technical Committees
Cast Iron Pipe Research Assn.
Electric Light and Power Group:
Assn. of Edison Illum. Cos.
Edison Electric Institute
Fire Protection Group:
Associated Factory Mutual Fire Insurance Companies
Nat. Bd. of Fire Underwriters
Nat. Fire Protection Assn.
Underwriters' Laboratories
Institute of Radio Engineers
Internat. Acetylene Association
Light Metals Group:
Aluminum Company of America
Mfrs. Standardization Soc. of the Valve and Fittings Industry
Nat. Assn. of Mut. Casualty Cos.
Nat. Bureau of Casualty and Surety Underwriters
Nat. Electrical Mfrs. Assn
Nat. Machine Tool Bldrs.' Assn.
Nat. Safety Council
The Panama Canal
Soc. of Automotive Engineers
Telephone Group:
Bell Telephone System
U. S. Department of Agriculture
U. S. Department of Commerce
U. S. Department of Interior
U. S. Department of Labor
U. S. Govt. Printing Office
U. S. Navy Department
U. S. War Department

Officers

Howard Coonley	*President*
F. E. Moskovics	*Vice-President*
P. G. Agnew	*Secretary*
Cyril Ainsworth	*Assistant Secretary*
Arthur Kallet	*Editor*
Ruth E. Mason	*Assistant Editor*

The American Standards Association is organized to provide systematic means of cooperation in establishing American Standards to the end that duplication of work and the promulgation of conflicting standards may be avoided; to serve as a clearing house for information on standardization work in the United States and foreign countries; to act as the authoritative American channel in international cooperation in standardization work

Subscription price $4.00 per year (foreign $5.00); single copies 35 cents

The Safety Code Work of the Bureau of Standards

by

M. G. Lloyd, *Chief*
Section of Safety Standards,
National Bureau of Standards

How the Bureau of Standards has helped in the development of codes covering special hazards, providing fundamental research and investigations

This article is the fifth in the series describing the work of five Divisions and Sections of the Bureau of Standards, part of which is now being carried on by the ASA and the Bureau of Standards under a cooperative arrangement between the two organizations.

—

The work of the Bureau of Standards in formulating safety standards was inaugurated about twenty years ago, when Congress made an appropriation for an investigation of the hazards involved in using high potentials. The investigation of these hazards naturally led to the consideration of means for preventing accidents of this nature, and a final result was the formulation of a safety code which is designated the National Electrical Safety Code.

After investigating electrical accidents and the varying practices involved among different operating companies, it was thought that standardization of practice according to the best methods in use would be an important safety factor. Attention was consequently first given to operating rules, and the first edition of such rules was published in August, 1914, as circular No. 49. This was revised with the cooperation of the Committee on Accident Prevention of the National Electric Light Association, and a second edition published in May, 1915.

Three other parts of the code were issued in April, 1915, as circular No. 54. These dealt, respectively, with the construction of generating stations and substations; the construction and maintenance of overhead and underground transmission and distribution lines; and utilization equipment. An appendix dealing with grounding practices was included in this edition, and it was eventually developed into a separate section of the Code.

A second edition was published in December, 1916, combining the operating rules of circular No. 49 and this was widely distributed and received considerable use and careful study, especially by the public utility companies concerned. The public service commissions of many states recommended it for attention and trial by the electrical utilities, and parts of it were adopted in certain states by the commissions having appropriate jurisdiction. It was used as a basis for orders issued in some other states, but was mainly used as a standard of reference.

In preparing this edition of the Code, the Bureau had the cordial cooperation and assistance of many state industrial and public-service commissions, municipal electrical inspectors, engineers of operating and manufacturing companies, committees of engineering societies, representatives of the electrical workers and of casualty and fire insurance underwriters. A large number of conferences were held between these persons and representatives of the Bureau. Formal conferences were held in Boston, Schenectady, New York, Philadelphia, Washington, Atlanta, Columbus, Chicago, St. Louis, Denver, Boise, Los Angeles, San Francisco, Portland, and Seattle. Informal conferences were held in many other places in all parts of the country. In addition, field surveys were made of the practices in different sections of the country. As a result, many differences of opinion were eliminated, and changes in the text of the Code were made to meet justifiable criticisms. Recognition was given to differences in climate and density of population where these affect the hazard involved. Such considerations added many details to the rules, and increased the bulk of the Code, but it was generally agreed that this resulted in a more satisfactory and an acceptable set of rules.

The 1916 edition of the code was issued for the main purpose of trial and criticism, as a result of which a third edition was issued in 1920 as a more definite standard for general application and, where utility and industrial commissions desired formal

orders, for legal application. In whole or in part it was adopted in nearly half of the states. With this edition of the Code, a discussion of the rules, which previously had been printed under the same cover, was issued as a separate volume. This edition of the Code was submitted to the ASA for approval and was approved by it in 1922 as an American Standard.

The National Electrical Safety Code was again revised, after several years of further experience in its application, and re-issued in 1926. In addition to making minor changes in the requirements, two of the parts were rearranged and a new part was added, dealing with radio installations. This revision was carried out by a Sectional Committee under the rules of procedure of the American Standards Association.

This Code has been applied by legal authorities of the several states more widely than any other standard approved by the American Standards Association. Table 1 gives the details of such use of the Code.

The National Electrical Safety Code is essentially an accident-prevention code. The National Electrical Code is essentially a fire-prevention code. The latter deals with interior wiring, utilization apparatus, etc., subjects covered by Part 3 of the Safety Code. To avoid the necessity of referring to two documents to find all of the rules relating to this subject, the Bureau in 1918 prepared a combination of the two, and has compiled successive editions from time to time as revisions of the component codes have made it necessary. This Electrical Code combining the fire-prevention and safety rules has not been printed by the Bureau, as it is regularly printed by the Bureau of Labor of Oregon, in which state it is the legal code.

During the war the United States Government for the first time gave detailed attention to the prevention of accidents in its own industrial plants, such as the arsenals and navy-yards. Safety engineers were appointed, and these safety engineers formed an informal organization for cooperation in their own work. The Bureau of Standards was called upon by them to assist in formulating a series of safety standards for application in the government establishments. Such standards were drawn up and were printed by the United States Shipping Board.

The work which had been done in formulating these standards for the Government's own use seemed so valuable that it was suggested that similar standards should be formulated for general use throughout the country. An interest was shown in this idea by all those concerned with accident prevention and especially by the various state commissions concerned with factory inspection and with the general safety of workers. Realizing the importance of safety codes prepared upon a national basis, and as a result of demands for extension of its previous work, the Bureau called a preliminary conference on this subject at Washington in January, 1919, and a second conference in December of the same year. These conferences were attended by more than 100 men, including delegates from the national engineering societies, Federal, state, and municipal officials, representatives of employers and employees, representatives of the casualty insurance companies, and other persons interested in accident prevention.

TABLE 1

State actions respecting the National Electrical Safety Code

States using the Code verbatim or with slight modifications	*Section or part of Code concerned*	*Edition of NESC used*	*Date in force*
Arizona	All	4	1928
Colorado	Sec. 9	4	1917
Idaho	2	4	1927
Iowa	2	4	1927
Maine	1, 2, 3, 4, 9	4	1928
Maryland	All	4	1927
Montana	All construction	4	1917
New Jersey	All	4	1927
North Dakota	2	3	1920
Oklahoma	2	3	1921
Oregon	3, 9	4	1919
Oregon	1, 2, 4	4	1927
Pennsylvania	1, 3, 4, 9	2	1917
Utah	2	4	1928
Vermont	2	4	1929
States adopting rules based on NESC			
California	1	2	1918
California	2, 3, 9	3	1922
Connecticut	2 (Joint Use)	3	1922
Illinois	2	4	1927
Kansas	2	2	1917
Michigan	1, 2, 3, 4, 9	3	1926
Nevada	2	2	1920
Nevada	5	4	1928
Washington	3	3	1924
Wisconsin	1, 2, 3, 4, 9	3	1924
Crossing specifications based on NESC			
Minnesota	2	4	1926
Nebraska	2	2	1919
North Carolina	2	3	1921
South Dakota	2	4	1926
Tennessee	2	3	1921
Using NESC as guide to practice			
California	1	4	
Colorado	2	4	
Connecticut	2	4	
Indiana	2	4	
Missouri	2	4	
New York	2	4	
Virginia	2	4	
West Virginia	2	4	

At the first conference the subject was fully discussed, the needs for national codes generally recognized, and the best method for preparing them given full consideration. A subcommittee of three was appointed to prepare a printed report and submit for ballot the two principal plans for procedure. As the result of this ballot, announced at the second conference, it was agreed that the scheme of procedure in establishing national standards which had recently been inaugurated by the American Standards Association (then known as the American Engineering Standards Committee) would be the most satisfactory to utilize in the preparation of the safety codes. To do this it would be necessary to enlarge the scope and membership of the American Standards Association, and this was done as a direct result of these conferences.

After the American Standards Association agreed to cover the field of safety standards, the National Safety Code Committee, later designated as the Safety Code Correlating Committee, was organized by the Bureau of Standards, the Bureau of Labor Statistics, and the National Safety Council. The first chairman of this committee was Dr. E. B. Rosa of the Bureau of Standards. This committee acts in an advisory capacity to the American Standards Association. Its first report included a list of 37 safety codes which were considered of the most immediate importance, and for which sponsor bodies were recommended. Since that time it has made additional recommendations from time to time, and has advised the American Standards Association with respect to action in approving the membership of sectional committees and in approving completed safety codes.

The Bureau of Standards accepted sole sponsorship for three codes which it had already prepared, and joint sponsorship for others. The three codes for which sole sponsorship was undertaken were the National Electrical Safety Code, the National Safety Code for the Protection of the Heads and Eyes of Industrial Workers, and the American Logging and Sawmill Safety Code.

The Bureau aimed its activities more especially at those occupations which were considered to involve especial hazard, and those subjects for which codes could not be written by members of a committee sitting around a table, but which required time-consuming work in the form of laboratory research or tests, the collection of field data and experience, or other personal activities. Years were devoted to developing the National Electrical Safety Code, which involved all of the above kinds of work. The mere calculation of the tables of sags of overhead line conductors involved weeks and weeks of desk work. In preparing material for the Logging and Sawmill Code, two members of the staff visited a number of the most active logging regions of the country.

The Safety Code for Heads and Eyes required laboratory tests of two kinds, one dealing with suitable mechanical strength of goggles, the other with optical transmission of glasses intended to protect against harmful radiation. The second edition of this code was prepared under the procedure of the ASA. A third edition is now nearing completion. Since no code has heretofore been available covering the use of respirators, hose masks, and other equipment for protecting the lungs against dusts and toxic gases, the Safety Code Correlating Committee recommended that this project be extended to cover the latter field. This is being done at the present time, but obtaining the information and data necessary for the proper specification of respirators has proved a difficult task, with a resulting delay. Since eye and lung protection are combined in such equipment as masks and sandblasting hoods, it would be difficult and inconvenient to separate the requirements for the two types of protection.

The Safety Code for Aeronautics was originally sponsored jointly by the Bureau of Standards and the Society of Automotive Engineers. The Bureau added to its staff for this work an ex-pilot with varied engineering experience, and the experience of Navy and Army Air services was closely followed. The development of the Code was carried out at the Bureau with the help of the usual representative sectional committee. This code was published by the Society of Automotive Engineers. After the Aeronautics Branch of the Department of Commerce was given legal authority over air navigation, the Bureau of Standards retired from this sponsorship and the attendant activities so as not to duplicate work which had been assigned elsewhere in the Department of Commerce.

For similar reasons the Bureau of Standards has not taken a leading part in any safety work relating primarily to mining or railways, although it has cooperated in such activities where it could be of assistance.

An investigation of the damage done by lightning and the means of protection had been carried on earlier by the Bureau, and it was consequently requested to undertake a joint sponsorship with the American Institute of Electrical Engineers for a Code for Protection Against Lightning. The first three parts of this Code have been published in two editions by the Bureau. The fourth and fifth parts, dealing with the protection of electrical lines and apparatus, have been covered by a preliminary

printed report, but the completion of a formal code awaits the outcome of experiments and developments which have been under way for several years. Practice cannot by crystallized while it is undergoing rapid development, and decisions made too early might become obsolete without proving useful.

At the time the Safety Code Correlating Committee was formulating its first report, both the Bureau of Standards and the American Society of Mechanical Engineers had been doing work on an Elevator Safety Code, and had already been cooperating. The American Institute of Architects found this a subject of close interest and the three accepted joint sponsorship for this project. The third edition of the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators has been published by the American Society of Mechanical Engineers (1931). This is another subject where laboratory research was found necessary before suitable standards could be set for performance. Funds were gathered and a research fellowship established at the Bureau of Standards as a result of which actual performance of buffers and under-car safeties was measured and standards established. Text has been prepared by a member of the Bureau staff for a Handbook for Elevator Inspectors, which will be a companion volume to the Elevator Safety Code.

To definitely specify the colors to be used in traffic signals, laboratory tests were again necessary. The Bureau became a joint sponsor for Colors of Traffic Signals, and its Colorimetry Section made the necessary measurements. The specification for colors of both luminous traffic signals and of the paint used for traffic signs continues in use, although the Bureau retired from sponsorship upon completion of this standard to make way for the more comprehensive project on Street Traffic Signs, Signals, and Pavement Markings.

The Bureau has also served as joint sponsor for the Gas Safety Code, the Code for Automobile Brakes and Brake Testing, and Methods of Test and Performance Requirements for Safety Glass.

Representatives of the Bureau of Standards have served on the sectional committees which have prepared, or are now in course of preparing, 31 other codes in the series of American standard safety codes. In many of these the Bureau representatives have played only a minor part, while in others they have taken a very active part in securing the necessary data and experience and in formulating the regulations.

In addition to its work in preparing safety codes, the Bureau has given attention to the prevention of accidents to the public and in the home, and has issued two editions of a circular devoted to safety for the household. Members of the Bureau staff took an active part in the Conference on Street and Highway Safety, inaugurated by Mr. Hoover when he was Secretary of Commerce, and continued by Secretary Lamont. They have cooperated with the General Federation of Women's Clubs, with the American Society of Safety Engineers, the National Safety Council, and with state officials in the cause of accident prevention. In many states, officials having jurisdiction have applied the safety codes prepared by the Bureau, and in other cases advice and service upon local committees have been rendered.

The Section of Safety Standards of the Bureau of Standards has prepared the following Bureau publications, in addition to the codes issued by joint sponsors, and numerous articles appearing in other publications and in the proceedings of technical societies.

	B. of S. Series
Circulars	
Safety Rules to be Observed in the Operation of Electrical Equipment and Lines	C49
Proposed National Electrical Safety Code (first edition)	C54
National Electrical Safety Code (second edition)	C54
Public Utility Service Standards of Quality and Safety	C68
The Scope and Application of the National Electrical Safety Code	C72
Safety for the Household (first edition)	C75
Safety for the Household (second edition)	C397
Miscellaneous publications	
Code for Protection Against Lightning (first edition)	M92
Protection of Electrical Circuits and Equipment Against Lightning	M95
Technologic paper	
Results of a Survey of Elevator Interlocks and an Analysis of Elevator Accident Statistics	T202
Handbooks	
National Safety Code for the Protection of the Heads and Eyes of Industrial Workers (first edition)	H2
National Safety Code for the Protection of the Heads and Eyes of Industrial Workers (second edition)	H2
National Electrical Safety Code (third edition)	H3
National Electrical Safety Code (fourth edition)	H3
Discussion of National Electrical Safety Code (to accompany third edition)	H4
Discussion of National Electrical Safety Code (to accompany fourth edition)	H4
American Logging and Sawmill Safety Code(first edition)	H5
Safety Rules for the Installation and Maintenance of Electrical Supply Stations (Comprises Part 1 and grounding rules of the fourth edition of the National Electrical Safety Code)	H6
Safety Rules for the Installation and Maintenance of Electric Utilization Equipment (Comprises Part 3 and grounding rules of fourth edition of the National Electrical Safety Code)	H7

Safety Rules for the Operation of Electrical Equipment and lines (Comprises Part 4 of the fourth edition of the National Electrical Safety Code and supersedes C49) H8

Safety Rules for Radio Installations (Comprises Part 5 of the fourth edition of the National Electrical Safety Code) H9

Safety Rules for the Installation and Maintenance of Electrical Supply and Communication Lines (Comprises Part 2 of the fourth edition of the National Electrical Safety Code) H10

Wood Poles for Overhead Electrical Lines (New standard values for ultimate fiber stresses) H16

Code for Protection against Lightning (second edition) (Supersedes M92) H17

Letter circulars

Publications Relating to Accident Prevention and Safety LC60

Application of the National Electrical Safety Code LC261

American vs. British Foundry Pattern Markings

The advantages of certain American practices in the coloring and marking of foundry patterns are pointed out by E. Longden in a paper presented before the Manchester Association of Engineers and published in the March, 1933, issue of *Machinery Market*, London.

"In America and to a much smaller extent Europe," says Mr. Longden, "considerable headway has been made in the standardization of trade practice and pattern identification markings.

"Both British and American Standards recommend the marking of the pattern to indicate the requirements of the foundry for chills and denseners. It is also recommended by the American Standards where casting surfaces are to be accurately gaged, though not machined, and indications are required for location points for machining operations, that distinctive markings be adopted. Further, it is recommended that both gaged surfaces and machining locating points be shown on the drawing-prints and that where practicable, locating points shall not appear on cored surfaces.

"It is also recommended that loose pieces for patterns and core boxes have stamped on them letters or numbers, or that one large and one small dowel pin be attached, so that positions cannot be reversed.

"Other standard practices may deal with types and sizes of pattern letters, leather fillets, core prints and, in plate and machine molding practice, pattern plate thickness, lug design, and location and size of vibrators, etc.

"Other color markings are recommended by the British Standards to distinguish one class of metal from another, but it is obvious that much trouble and source of error can be introduced by a complicated color scheme. Considerable satisfaction would result from a general adoption of a restricted color scheme to embrace all alloys and more in line with the American Standards. After all, the class of metal is always indicated on the order notes. A pattern might be used for different classes of metal from time to time, consequently re-painting could become irksome and unnecessarily expensive."

Mr. Longden gives the following tabular comparison of British and American practices; the British Standard Practice is sponsored by the British Institute of Foundrymen and the British Standards Institution:

British	*American*	*For:*
Black	Black	Surfaces unmachined or unfinished
Yellow	Red	Machined or finished parts
Red	Yellow	Core prints
Yellow	———	Periphery of core prints for machined holes
Wood color varnished	———	Seats for loose pieces, also loose pieces and backs of same
———	Red stripes on yellow background	Seats for loose pieces
Wood varnished with black stripes	Black diagonal stripes on yellow background	Stop-off pieces
Black striped with yellow	———	Machined all over
Natural wood	Natural wood	Outside of core box
Same color scheme as pattern	Same color scheme as pattern	Inside of core box

---

Standardization Important Factor in Increased Productivity

A study by William G. Roylance of the U. S. Department of Labor of increases in labor productivity and resulting displacement of labor caused by factors other than the use of machinery and power is included in the November issue of the *Monthly Labor Review*, a publication of the Bureau of Labor Statistics, U. S. Department of Labor. One of these factors, according to this study, is industrial stand-

ardization. The non-mechanical causes of increased labor productivity are listed as follows:

1. A more adequate and a more even flow of raw materials to the manufacturing industries.
2. More easily workable materials, better adaptation of materials to purposes of manufacture, and standardization of materials.
3. A faster and more even flow of products from the mines, the farms, and the factories to markets, reducing inventories and obviating the congestion of goods in warehouses.
4. Improved factory layout and machine assembly, and more efficient utilization of machinery and equipment.
5. More economical distribution and application of power.
6. Improved working conditions, and better adjustment of working time.
7. Better organization of the working force, including personnel selection and distribution.
8. More effective application of the energy and skill of workers (rationalization of movements, etc.).
9. Direct increase in individual efficiency.

Summarizing the influence of standardization, Mr. Roylance says:

"Another nonmechanical factor making for increased industrial efficiency is that of standardization. In general, standardization aims at uniformity of materials, products, or methods, or the simplification of processes, whenever output can be increased thereby, or waste eliminated. The term is applied to materials, products, tools, machines, processes, or methods. As applied to materials or products it may have reference to quantity, quality, size, type of construction, or to use or purpose.

"It is obvious that some degree of standardization is essential in mass production, and that the efficiency, especially of large-scale machine production must be largely limited by the possibilities of standardization. The exact measurement of the contribution of this factor in any particular case, however, is as difficult as for other technical factors not measureable in terms of power units. The International Labor Office cites a German instance in which a 300 per cent increase in man-hour output was achieved in the manufacture of electric meters by standardizing the product. The total annual saving to American industry by standardization was estimated by Mr. Hoover a few years ago at $600,000,000. According to another estimate, the saving through standardization in the automobile industries alone amounts to $750,000,000 annually."

Mr. Roylance closes his article with the following statement:

"It is indicated by the foregoing analysis that machinery and mechanical power, instead of being the controlling factors in modern industrial progress, have been merely the principal instrumentalities by which progress has been achieved. Throughout the entire development in this country, and even back to the beginning of the modern industrial age in the Old World, the moving forces making for economic progress have been scientific research, invention, organization, management, and cooperation. These have throughout been motivated by a persistent striving for individual and social betterment, which, as achieved, has reacted to aid and accelerate economic progress, by raising standards of living, improving working conditions, increasing the energy and skill of workers, and facilitating cooperation between workers and employers."

Standardization and Lithography

Adam Henry Reiser writes an article in the *Lithographer's Journal*, based largely on an interview with William Grass, a pioneer in the deep-etch field, which takes up the question of "Would Standardization Help Lithography?"

The assertion is made "that one of the biggest strides forward in our industry will come as a result of greater standardization . . . lack of standardization hurts our industry also through retardation. The deep-etch process—again the most promising lithographic printing method—because of more recent developments, could be much further advanced were there one unit, the acknowledged authority in this method, supplying standardized materials and disseminating bonafide and reliable education in that field. . . ."

The lack of standardization, it is pointed out, hurts the lithographic worker, which is evidenced when a tally is taken of the many and varied processes that an artist has to be familiar with. Other arguments for the need of standardization are presented. Many employing lithographers see the need for standardization not only as an economic move, but also for the important reason of making their workmen more flexible as in photo-engraving, electro-typing, letter-press printing. The need for standardization in the lithographing industry has been long existent.—*From "Printing," May, 1933.*

Revised Constitution of Electrical Standards Committee Approved by ASA

by

Charles Rufus Harte,[1] *Chairman*
Electrical Standards Committee

A revision of the Constitution of the Electrical Standards Committee was recently approved by the ASA Standards Council. The revision requires, in place of a unanimous vote of the Electrical Standards Committee, not more than two dissenting votes for affirmative action on initiation of projects, assignment of sponsorships, approval of the personnel of sectional committees, and revision of the ESC Constitution.

This action is the result of discussions in the ESC, following a request for membership from the Institute of Radio Engineers. It was felt that the personnel of the ESC should not be enlarged as long as the provisions covering unanimous action remained in the Constitution. The revision meets this objection, and is also expected to assist in expediting the work of the ESC. The physical handicaps incident to obtaining a unanimous vote by mail in many cases are very great, even though no objections to a proposal may be entertained by the members of the committee. It is believed, therefore, that as a result of the revision the future work of the Electrical Standards Committee will be even more effective and prompt than it has been since the organization of the Committee on October 13, 1931.

At the time of the organization of the ESC, the ASA Standards Council delegated to the Electrical Standards Committee various functions which may be reviewed briefly as follows, and in the handling of which the ESC acts in the capacity of:

1. Advisory committee to the Standards Council for the coordination of standardization work in the electrical field under any recognized procedure of the American Standards Association, with the right to determine questions of sponsorship, scope of projects, and the personnel of sectional committees.

2. Sponsor for projects on behalf of the electrical industry.

3. Sectional committee for the electrical industry, under ESC sponsorship (as provided above). In such cases the formulation of standards may be done by the ESC itself, or by delegation to appropriate working committees at the discretion of the ESC.

Under the new revision of the ESC Constitution, for affirmative action on any questions being considered under the above classifications, not more than two dissenting votes may be cast.

4. The coordinating medium for American participation in international standardization work within the electrical field.

5. Representative of the electrical industry in the case of projects which involve other industries as well as the electrical industry, to the extent of determining or recommending a sponsor to act for the qualified and interested groups, or, where the interests of the electrical industry do not warrant sponsorship, to recommend the degree of cooperation desirable in the particular project. The vote of the ESC required on such actions is determined by their relation to actions under the previous classifications.

The Electrical Standards Committee reports the results of its actions in the determination of sponsorships, scopes, and personnel of sectional committees for standardization projects within its jurisdiction to the Standards Council, and these actions may be subject to review by the Standards Council. The projects for which the ESC is responsible are shown in the review of electrical projects on page 212 of this issue.

The Electrical Standards Committee also acts as an advisory committee to the ASA Standards Council on standards in the electrical field submitted to ASA for approval. In such cases it is required to vote by letter ballot of the full committee, and four negative votes are sufficient to cause the rejection of a proposed standard. The present revision of the Constitution does not affect this requirement.

[1] Construction Engineer, Connecticut Company, New Haven, Conn.; vice president, United States National Committee of the International Electrotechnical Commission.

Since its organization, the Electrical Standards Committee has recommended to the Standards Council the approval of 19 standards. The Standards Council has acted favorably in all of these cases.

Two decisions affecting major policies in connection with specific standardization projects have been made. On account of the administrative difficulties involved, the ESC objected to multiple sponsorships in cases of technical standardization, and itself assumed sponsorship for such projects (exclusive of codes) in cases where this action was acceptable to the existing sponsors. It also, where necessary, consolidated projects covering one particular kind of electrical apparatus to form a single project under one sectional committee. Under these two decisions, the ESC is now sponsor for the following projects: Specifications for Insulated Wires and Cables (Other than Telephone and Telegraph) (C8); Insulators for Electric Power Lines (C29); Power Switchgear (C37); Electrical Measuring Instruments (C39); Rotating Electrical Machinery (C50); Transformers (C57).

The Electrical Standards Committee has also designated the American Society for Testing Materials as sponsor for a project on Electrical Insulating Materials (C59), covering a broad scope; and has designated the American Institute of Electrical Engineers as sponsor for a project on Standardization of Vacuum Tubes for Industrial Purposes (C60).

A.S.T.M. Publishes 1933 Book of Standards

The American Society for Testing Materials has just issued its *Book of A.S.T.M. Standards*, a triennial publication containing all of the standard specifications, methods of test, recommended practices, and definitions formally adopted by the Society.

The book is published in two parts—Part I containing all A.S.T.M. standards covering metallic materials; Part II, all standards relating to non-metallic materials.

In both parts of the book, the specifications for a particular class of material are given first, followed directly by the test methods, definitions, etc. A complete subject index is included, key words being given in alphabetical sequence. This index, together with two tables of contents, one listing the standards under the materials covered, the other listing them in the numeric sequence of their designations, greatly facilitates the use of the book.

Sixty-six of the Society standards have been approved by the American Standards Association. A note indicating the ASA approval is printed on each of these standards, together with the respective ASA designation.

Part I—Metals—Of the 185 standards in Part I, 104 cover the ferrous metals, steel, wrought iron, pig iron, and iron castings and ferro-alloys, while 70 relate to non-ferrous metals, including aluminum and magnesium alloys, copper and copper alloys, lead, nickel, zinc, bearing metals, solder metal, deoxidizers, electrical-heating and electrical-resistance alloys. Eleven of the standards involve metallography and general testing methods.

New specifications, adopted in 1933, are included for the following materials covered in Part I: soft steel track spikes; structural rivet steel; marine boiler steel plates; structural steel for ships; heat-treated carbon-steel helical springs; lap-welded and seamless steel and lap-welded iron boiler tubes; austenitic manganese-steel castings; open-hearth iron plates of flange quality; steel plates of flange and firebox qualities for forge welding; fire-refined copper other than lake; silver solders (chemical analysis); electrical-resistance alloys (accelerated life test, test for thermo-electric power); seamless copper tubing; copper water tube.

New specifications are also included for the following zinc-coated (galvanized) iron or steel products: telephone and telegraph line wire, tie wires, wire strand (cable), and chain-link fence fabric.

The new recommended practice for thermal analysis of steel and the grain size chart for classification of steels are also included in Part I.

Revisions in some 40 of the existing standards covering metallic products were adopted during 1933. Materials covered by these revised standards include: steel tie plates; structural silicon steel; boiler and firebox steel for locomotives and for stationary service; concrete reinforcement bars (billet steel and rail steel); wrought iron bars (staybolt, engine bolt); zinc (hot-galvanized) coatings on structural steel shapes; zinc-coated articles (determining weight of coating); slab zinc spelter; brass pipe (standard sizes); sheet high brass.

Part II—Non-Metallic Materials—Included in the 285 standards contained in Part II—on Non-Metallic Materials—are 37 new standard specifications and methods of test adopted in 1933. These include specifications for raw tung oil; boiled linseed oil; linseed oil putty for glazing; dry bleached and orange shellac; asbestos electrical tape; chafer tire fabrics; enameling duck for the tire industry. They also include methods of test as follows: fire tests of construction materials; testing gypsum and gypsum products;

sampling and testing shellac; dilution test for crankcase oils; sampling petroleum and its products; resistivity test for insulating materials; tolerances and tests for knit goods.

Among the standards revised in 1933, the following include those in which important changes were made: porosity and volume change tests for refractory materials; organic impurities test for sands for concrete; routine analysis of white pigments; cloud and pour point and viscosity test for petroleum products; structural timber, joists, planks, etc.; sampling and analysis of creosote oil; tests for molded electrical insulation; tire cord (woven and on cones); cotton sewing threads; asbestos yarns.

A comparison of the 1930 and the current issues of the *Book of Standards* shows that in 1930 there were 427 standards aggregating 2200 pages, whereas the present issue contains 460 standards and 2400 pages.

Copies in cloth binding of either part of the book are on sale at $7.50; both parts at $14.00. They can be purchased from the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, or through the office of the American Standards Association.

The A.S.T.M. will soon publish its current annual volume of the *Book of Tentative Standards*, also. The 1933 issue will contain 223 tentative standards, which are issued by the Society for trial before final adoption.

Foreign Standards Available from ASA

New foreign standards available to ASA Members for loan or purchase through the ASA office are listed below. They are available in the language of the country under which they are listed. In requesting copies of the standards it is necessary to list only the serial numbers preceding the titles. Send either a post-card or a note containing the name of the person wishing to receive the standards, and the numbers of the standards desired. The card or envelope should be addressed to the American Standards Association, 29 West 39th Street, New York, N. Y.

Serial Number — *Germany*

446. Track switches, 450 to 635 mm (18 to 25 inch) gage, simple 1:5 turnout, track layout measurements
447. Track switches, 600 mm (24 inch) gage, simple 1:5 switch with 93/18 rails; list of materials
448. Track switches, 600 mm (24 inch) gage, simple 1:5 switch with 93/18 rails; plan
449. Track switches, 600 mm (24 inch) gage, sliding switch assembly
450. Track switches, 600 mm (24 inch) gage, sliding switch details
451. Track switches, 600 mm (24 inch) gage, switch point assembly for simple 1:5 switch with 93/18 rails
452. Track switches, 600 mm (24 inch) gage, switch point assembly for simple 1:5 switch with 93/18 rails, rail details
453. Track switches, 600 mm (24 inch) gage, switch point assembly for simple 1:5 switch with 93/18 rails, point rail details
454. Track switches, 600 mm (24 inch) gage, switch point assembly for simple 1:5 switch with 93/18 rails, switch plates and fittings; details
455. Track switches, 600 mm (24 inch) gage, switch point assembly for simple 1:5 switch with 93/18 rails, switch rods and fittings; details
456. Track switches, 600 mm (24 inch) gage, simple 1:5 switch with 93/18 rails, list of materials
457. Track switches, 600 mm (24 inch) gage, tie plates (rail clips)
458. Track switches, 600 mm (24 inch) gage, tongue rails (T-rails) sections

---

New Book on Purchasing

Industrial Purchasing, a book prepared under the auspices of the National Association of Purchasing Agents, by Professor Howard T. Lewis of the Graduate School of Business Administration, Harvard University, has been published by Prentice-Hall, Inc., New York. Subjects covered include centralization, purchasing procedure, quality, inspection, control of quantity and stores, sources and the assurance of supply, price policies, speculative purchasing, purchasing budgets, the purchase of installations, purchasing in its relation to marketing, some legal aspects of purchasing. Sections on standard specifications and testing are included in the chapters on quality and inspection.

The book is available from Prentice-Hall, Inc., 70 Fifth Avenue, New York, or may be ordered through the American Standards Association, at $5.00 a copy.

ASA PROJECTS

A Review of Electrical Engineering Projects Under ASA Procedure

The second of a series of reviews of standardization projects under the procedure of the American Standards Association

The status of all electrical engineering projects under the procedure of the American Standards Association is summarized in the following review. The data presented are taken from the files of the American Standards Association and are corrected to December 1, 1933, bringing up to date the review of electrical engineering projects published in the issue of January, 1933.

C1-1933—Regulations for Electric Wiring and Apparatus in Relation to Fire Hazard ("National Electrical Code")

Sponsor—National Fire Protection Association.

The 1933 edition of the National Electrical Code was approved as American Standard on September 1, 1933. This revision of the Code constitutes the sixth since that of 1920 when the Code was first approved as American Standard. The first edition was issued in 1897. These facts indicate clearly how flexible and susceptible to change some standards must be if they are to register properly the state of the art or the industry or product affected.

The National Electrical Code either verbatim or modified is the basis for legal wiring regulations in more than 2200 communities and of a similar number of enforcing authorities. Many adopt the current edition by title and on this account, in part, the form and arrangement of the Code remain as they have since the edition of ten years ago. Many minor changes were made in this edition of the Code in an endeavor to maintain a consistent editorial style throughout, but the major changes which have been made may be briefly reviewed as follows:

In *Article 1* changes were made to secure uniformity with the proposed American Standard Definitions of Electrical Terms (C42).

In *Article 4* changes were made concerning the service conductors for multiple tenant buildings. The use of uninsulated conductors on grounded neutrals of service conductors is recognized for a wider variety of circumstances, as were the limitations upon the use of unfused meters. Provision is made for a flame-retarding as well as a moisture-proof finish on single conductor circuit wires in Article 6, while in Article 8 a new type of non-tamperable plug fuse is recognized.

Changes in *Article 9* include wider use of artificial grounding electrodes; and *Article 20* is a new article entitled Wiring Installation Design. *Article 41*—Emergency Lighting—is likewise new.

C2-1927—National Electrical Safety Code

Sponsor—National Bureau of Standards.

This Code was approved as American Standard in 1927. No work is being done upon it at the present time since no requests for a revision of the 1927 Code have been received by the ASA.

C5-1929—Code for Protection against Lightning

Sponsors—American Institute of Electrical Engineers; National Bureau of Standards.

Revisions of Part 1 covering Protection of Persons against Lightning (C5.1-1933) and of Part 2 covering Protection of Buildings and Miscellaneous Property (C5.2-1933) were approved as American Standard during the year. Part 3 covering Protection of Structures Containing Inflammable Liquids and Gases (C5.3-1929) which was approved in 1929 as American Tentative Standard remains unchanged. Parts 4 and 5, Protection of Electrical Circuits and Equipment against Lightning, which were printed by the Bureau of Standards as a preliminary report of the sectional committee in September, 1929, for the purpose of securing comments and suggestions, still remain in circulation.

C6-1925—Terminal Markings for Electrical Apparatus

Sponsor—National Electrical Manufacturers Association.

A revision of this standard is deemed to be desirable and the sponsor has compiled information necessary to the initiation of the revision. This information will be circulated to the members of the sectional committee shortly and a meeting will be held within the next month or so.

C8—Insulated Wires and Cables (Other than Telephone and Telegraph)

Sponsor—Electrical Standards Committee.

A meeting of the sectional committee was called on January 5, 1933, to organize the work of the sectional committee following the transfer of sponsorship from the former ten sponsors to the Electrical Standards Committee. At this meeting F. M. Farmer was elected chairman; G. M. Haskell, vice-chairman; W. F. Davidson, secretary; and the following, who, with the addition of the above-mentioned officers, comprise the executive committee, were also elected: W. A. Del Mar, Dean Harvey, C. B. Martin, and Dana Pierce. The following technical subcommittees were re-established:

Committee	1	on Definitions and General Standards
Committee	2	on Conductors and Stranding
Committee	4	on Rubber Insulation
Committee	5	on Impregnated Paper Insulation
Committee	6	on Varnished Cloth Insulation
Committee	7	on Magnet Wire Insulation
Committee	8	on Fibrous Covers and Fillers
Committee	9	on Metallic Covers
Committee	12	on Weatherproof, Heat Resisting, and Similar Wires and Cables

The following specifications have been approved as a result of the committee's work during the year: Specifications for Impregnated Paper Insulation for Lead Covered Power Cables (C8.10-1933) and Specifications for Code Rubber Insulation (C8.11-1933).

C10-1924—Symbols for Electrical Equipment of Buildings

Sponsors—American Institute of Electrical Engineers; American Institute of Architects; Association of Electragists, International.

The Electrical Standards Committee has under discussion the possibility of inclusion of this work in a more general scheme of standardization of symbols and abbreviations for scientific and engineering terms.

C11-1927—Physical and Electrical Constants for Hard-Drawn Aluminum Conductors

Sponsor—American Institute of Electrical Engineers.

No revision of this standard has been made within the past year. The sectional committee which serves the United States National Committee of the International Electrotechnical Commission as adviser on the subject continues to be occupied with the international standardization of aluminum for conducting purposes.

C12-1928—Code for Electricity Meters

Sponsors—National Bureau of Standards; Edison Electric Institute; Association of Edison Illuminating Companies.

This code was approved as an American Standard on February 20, 1928. The present is the third edition of the code, the second edition having been approved by the American Standards Association in 1922.

This code may be considered the fundamental authority on all matters relating to watthour meters and demand meters. It covers definitions, standards, specifications for the acceptance of types of watthour meters, and auxiliary apparatus for use with such meters, installation methods, test methods, laboratory and service tests for watthour meters, as well as similar information relative to demand meters.

The code has been used as a basis for proposals made through the United States National Committee of the International Electrotechnical Commission for international standardization of watthour meters.

C13-1926—Specifications for Tubular Steel Poles

Sponsor—American Transit Association.

The specifications were approved as American Tentative Standard on October 14, 1926.

The importance of this work is easily understood when it is considered that 1400 combinations of tubular steel poles have been shown in a catalog of a single company, while this specification lists 16 which are sufficient to meet practically all commercial needs. The specifications contain a simple table of deflections, together with the formula from which they are computed, for use in the selection of poles. The specifications apply to built-up tubular steel poles of three sections.

No revision of these specifications is contemplated at the present time.

C15-1923—600 Volt Direct-Current Overhead Trolley Construction

Proprietary Sponsor—American Transit Association.

A revision of this standard has reached the state of submission to letter ballot of the appropriate technical committee of the proprietary sponsor. After the letter ballot has been completed necessary acceptance from industry will be secured and the standard submitted to the American Standards Association for approval.

C16—Radio

Sponsors—American Institute of Electrical Engineers; Institute of Radio Engineers.

During the year the committee has continued to collaborate with the sectional committee on Definitions of Electrical Terms (C42) and has considered reports transmitted to it from abroad in its capacity as advisory committee to the U. S. National Committee of the IEC on Radio. It is expected that a meeting of the committee will be held in the near future for further consideration of these subjects and of the other work remaining before the committee which has to do with methods of test for radio broadcast receivers, radio transmitters, vacuum tubes, and allied apparatus. This standardization work of necessity proceeds slowly on account of the rapid developments which are taking place in the art.

C17—Miscellaneous Pole Line Materials

Sponsor—ASA Electric Light and Power Group.

Work on this project has not yet been started.

C18-1930—Specifications for Dry Cells and Batteries

Sponsor—National Bureau of Standards.

A revision of these specifications is being actively worked upon at the present time. It is expected that the new specifications when they are submitted will include some additional types of batteries, the most important of which are those used in aids to hearing.

C19-1928—Industrial (Electrical) Control Apparatus

Sponsors—American Institute of Electrical Engineers; National Electrical Manufacturers Association.

Up to the present time no new developments have arisen which would indicate the necessity for a revision.

C22-1925—Instrument Transformers

Sponsor—Electrical Standards Committee.

No revision is at present contemplated but when the need for a revision arises it will be taken care of by the new Sectional Committee on Transformers (C57) covered below.

C28—Electric Motor Frame Dimensions

Sponsors—National Electrical Manufacturers Association; American Society of Mechanical Engineers.

The status of this project remains as reported in INDUSTRIAL STANDARDIZATION (then the ASA BULLETIN), January, 1932, page 39.

C29—Insulators for Electric Power Lines

Sponsor—Electrical Standards Committee.

The sectional committee on this project has received a few comments on the standard for Insulator Tests (C29a-1930) but up to the present none of these have been of such nature as to warrant a revision.

C33—Electrical Devices and Materials with Relation to Fire and Casualty Hazards

Sponsor—Underwriters' Laboratories.

The Electrical Standards Committee now has under discussion with the Underwriters' Laboratories, the proprietary sponsors for this project, the question of establishing a sectional committee.

C34—Mercury Arc Rectifiers

Sponsor—American Institute of Electrical Engineers.

A proposed new standard for metal tank mercury arc rectifiers has been completed by the sectional committee and forwarded to the sponsors for approval and transmission to the ASA for approval.

C35-1928—Railway Motors

Sponsor—American Institute of Electrical Engineers.

This sectional committee is actively at work on a revision of this standard and also expects to request the ASA through the sponsor to extend its scope to include all rotating electrical machinery for use in connection with the power equipment of electrically propelled railway cars and locomotives.

C37—Power Switchgear

Sponsor—Electrical Standards Committee.

The organization meeting of this committee was held in October, H. R. Summerhayes was elected chairman and G. S. Lunge, secretary of the committee, and the following subcommittees were appointed:

Oil Circuit Breakers—George Sutherland, chairman
Large Air Circuit Breakers—R. W. Wilbraham, chairman
Disconnecting and Horn Gap Switches—J. S. Lawson, chairman
Installation Electrical Test—R. M. Spurck, chairman

An additional committee was appointed to review the scope of the sectional committee with a view to requesting its change if it should develop that the inclusion of additional types of apparatus would facilitate the sectional committee's work. The subcommittee chairmen have been directed to review existing domestic and foreign standards with a view to inclusion in the standards to be prepared by the committee of desirable material, also with a view to promoting uniformity to the maximum possible degree. The next meeting of the sectional committee has been tentatively scheduled for January, 1934.

C39—Electrical Measuring Instruments

Sponsor—Electrical Standards Committee.

The organization meeting of this sectional committee was held in June and the following officers were elected: E. J. Rutan, chairman; H. C. Koenig, secretary.

A Subcommittee on Definitions was appointed. It was decided that the work of the Sectional Committee on Definitions of Electrical Terms (C42) should serve as a basis for this committee's work. Another subcommittee to consider questions of classification, rating, methods of test, and construction of electrical measuring instruments was also appointed.

The committee in its capacity as the advisory group to the U. S. National Committee of the IEC on electrical measuring instruments considered various proposals on the subject which had been transmitted to the USNC by the central office of the IEC. It was the opinion of the committee that the revised American Institute of Electrical Engineers standards No. 14 on Instrument Transformers and No. 33 on Electrical Measuring Instruments, together with the standards of the National Electrical Manufacturers Association on Instruments constituted the best American opinion to date.

C40-1928—Storage Batteries

Sponsor—American Institute of Electrical Engineers.

No necessity for revision of this standard, which is under the proprietary sponsorship of the A.I.E.E., has been indicated to date.

C42—Definitions of Electrical Terms

Sponsor—American Institute of Electrical Terms.

See a review of the status of this project on page 218.

C43—Overhead Trolley Line Material (*Proposed Project*)

The status of this project as given in INDUSTRIAL STANDARDIZATION, January, 1932, page 41, has not been changed.

C44-1930—Rolled Threads for Screw Shells of Electric Sockets and Lamp Bases

Sponsors—American Society of Mechanical Engineers; National Electrical Manufacturers Association.

The chief work of this sectional committee during the year has been in its capacity as advisers on lamp sockets and caps to the U. S. National Committee of the IEC.

C48-1931—Electric Railway Control Apparatus

Sponsor—American Institute of Electrical Engineers.

No revision of this standard, which was approved in December, 1931, is at present contemplated.

C50—Rotating Electrical Machinery

Sponsor—Electrical Standards Committee.

This sectional committee has rendered a report on standards for rotating electrical machinery which is described in detail on page 217 of this issue.

C52—Electric Welding Apparatus

Sponsors—American Institute of Electrical Engineers; National Electrical Manufacturers Association.

Two standards on electric welding apparatus developed by this sectional committee, Electric Arc Welding Apparatus (C52.1) and Resistance Welding Apparatus (C52.2) were approved as American Standards during the year. These standards are in general accord with the two standards of the A.I.E.E. upon which they are based. A number of minor changes were made both in the definitions and in

some of the technical requirements. The definitions were revised to agree with those proposed by the Sectional Committee on Definitions of Electrical Terms (C42) and certain of the performance requirements have been revised to bring them into accord with accepted current practice.

C55—Standards for Capacitors

Sponsor—American Institute of Electrical Engineers.

This proposed standard was originally submitted for approval in October, 1931, but before action was taken it was withdrawn by the A.I.E.E. in view of the desirability of certain revisions in the report which had come up since the submission. The proposed standard was resubmitted in October, 1933 by the A.I.E.E. as an existing standard and is now before the Electrical Standards Committee.

The proposed standards apply to capacitors for the following power applications: (1) power factor correction, (2) high frequency induction furnaces, (3) capacitor motors; and to capacitors for resonant shunts and filters, blocking capacitors, and capacitors for power oscillator circuits.

C57—Transformers

Sponsor—Electrical Standards Committee.

The organization meeting of this sectional committee was held on October 20, 1933. V. M. Montsinger of the General Electric Company was elected chairman and E. B. Paxton of the same company was elected secretary.

The committee has before it a large program of work as indicated by its scope: "Formulation of standards for Transformers (exclusive of auto transformers used as part of auto starters, automotive ignition transformers and communication transformers); voltage regulators of the induction or transformer type; and reactors."

The committee has decided to handle its work through the medium of the following technical committees, the chairmen of which are given following the names of the committees:

1. Technical Standards—H. V. Putman
2. Application Standards—R. T. Henry
3. Publication—E. B. Paxton
4. IEC Work—V. M. Montsinger
5. Instrument Transformers—(Chairman to be appointed later by the sectional committee chairman)

C58—Shellac

Sponsor—American Society for Testing Materials.

This project now forms a part of the work on Electrical Insulating Materials in General (C59) which is described below.

C59—Electrical Insulating Materials in General

Sponsor—American Society for Testing Materials.

This project, which contemplates a broad program of standardization of electrical insulating materials, was initiated in June under the sponsorship of the American Society for Testing Materials and with the following scope: "Specifications and methods of test for electrical insulating materials."

The sectional committee is to be composed of representatives of the following organizations:

American Institute of Electrical Engineers; American Railway Association; American Society for Testing Materials; American Transit Association; Bureau of Standards; Electric Light and Power Group; Fire Protection Group; National Electrical Manufacturers Association; Telephone Group.

The method of work proposed under the scheme of organization for the development of specifications and methods of test is that subcommittees of the A.S.T.M. technical committees will do the necessary technical work. These committees are at the present time broadly representative of the interests in their respective fields and it has been pointed out by the A.S.T.M. that under this method it will be imperative that the organizations represented on the sectional committee each appoint representatives on all of the technical committees engaged in work of interest to them.

The sectional committee will be composed of organizations having an interest in the whole field of electrical insulating materials. Associations, trade groups, and firms having an interest only in particular projects may secure representation on the subcommittees having the particular subjects in charge.

One of the special features of the plan of work of this sectional committee lies in the ability of the sectional committee to act as a coordinating committee between the group of technical committees concerned. In this way it will be possible to secure a group of related standards uniform in all details.

C60—Standardization of Vacuum Tubes for Industrial Purposes

Sponsor—Electrical Standards Committee.

This project was initiated by the Electrical Standards Committee in July, 1933, following a proposal by the American Institute of Electrical Engineers.

The project is to go forward under the sponsorship of the Electrical Standards Committee and the sectional committee is to be composed of representatives of the following organizations: American Institute of Electrical Engineers; American Railway Association; American Transit Association; Bureau of Standards; Electric Light and Power Group; Institute of Radio Engineers; National Electrical Manufacturers Association; Radio Manufacturers Association.

Report on Rotating Electrical Machinery Published for Comment

The first report of the Sectional Committee on Rotating Electrical Machinery (C50), organized in 1930 under the auspices of the American Standards Association has just been published, and is now being widely circulated for the purpose of securing comments and suggestions. The report includes standards for direct-current rotating machines; synchronous generators, synchronous motors, and synchronous machines in general; synchronous converters; induction motors and induction machines in general; and a-c and d-c fractional-horsepower motors.

The report is largely based upon the five standards of the American Institute of Electrical Engineers on the same subjects. Since the proposed new standards are in the nature of a revision, they will, when approved, supersede these five standards. The scope of the proposed standards has been broadened, however, to include, in addition to the material covered in the A.I.E.E. standards, a large number of widely used standard rules developed by the National Electrical Manufacturers Association.

Up to the present time these A.I.E.E. and N.E.M.A. standards have served as the principal bases of specifications for electrical machines. It is expected that the combination of these two important sets of standards in a single publication, to be approved finally by the ASA, will be of maximum usefulness to the buyer, seller, and manufacturer of rotating electrical machinery.

In the proposed standards emphasis has been placed upon definitions of the terms and conditions which characterize the rating and behavior of electrical machinery, with special reference to the conditions upon which acceptance tests are based.

The sectional committee, which is under the sponsorship of the Electrical Standards Committee, is composed of 32 representatives of 15 organizations and is broadly representative of the electrical industry. The organizations represented on the committee are: American Institute of Consulting Engineers; American Institute of Electrical Engineers; American Marine Standards Committee; American Mining Congress; American Railway Association; American Society of Mechanical Engineers; American Transit Association; Bell Telephone Laboratories; Electric Light and Power Group; National Electrical Manufacturers Association; Underwriters' Laboratories; U. S. Department of Commerce, Bureau of Standards; U. S. Navy Department, Bureau of Engineering; U. S. War Department.

L. F. Adams, General Electric Company, Schenectady, is chairman of the committee; and E. B. Paxton, also of the General Electric Company, is secretary.

Comments and suggestions are solicited from all interested in order to assist the committee in satisfactorily rounding the standards into final form. All comments should be addressed to E. B. Paxton, General Electric Company, Schenectady, N. Y.

At the end of a six months period, after criticisms and comments have been received and considered, the standards will be submitted through the sponsor, the Electrical Standards Committee, to the American Standards Association for approval as American Standards.

Copies of the report may be purchased from the office of the American Standards Association at 25 cents each.

Research on Shrinkage Recommended at Meeting

Further research as a basis for standards for the shrinkage of woven cotton goods was decided upon by a meeting held on November 28 under the auspices of the American Standards Association to consider a proposal for shrinkage standards submitted by the Shrinkage Textile Conference of the New York Board of Trade.

The meeting, under the chairmanship of F. M. Farmer, decided to limit its efforts for the present to piece goods as sold to the purchaser, leaving the question of shrinkage of finished garments to future consideration. It was unanimously agreed to adopt as a basis for research and for the administration of standards, the method of test for shrinkage included in the Federal Specification for "Textiles; Test Methods." These methods are identical with the methods approved by the American Association of Textile

Chemists and Colorists and the American Society for Testing Materials.

A committee will be appointed by the chairman to carry on further investigation and to report its recommendations at a later meeting.

Those present at the meeting were: P. G. Agnew, American Standards Association; W. D. Appel, U. S. Bureau of Standards; W. Ray Bell, Association of Cotton Textile Merchants; Charles L. Bernheimer, Textile Shrinkage Conference of the New York Board of Trade; F. A. Colt, Cotton Textile Institute; Howard D. Clayton, American Association of Textile Chemists and Colorists; Robert S. Dempsey, Association of Cotton Textile Merchants; E. J. Driscoll, Sayles Finishing Plants, Inc.; Ephraim Freedman, American Society for Testing Materials; M. Leo Gitelson, Textile Fabrics Association; R. E. Hess, American Society for Testing Materials; W. R. Howell, Bradford Dyeing Association; H. M. Lawrence, American Standards Association; Frank A. Lester, National Association of Finishers of Textile Fabrics; Albert Mannheimer, Standard Cloth Company; R. G. Myers, Sayles Finishing Plants, Inc.; Ruth O'Brien, American Home Economics Association; Ray Schlotterer, Textile Shrinkage Conference of the New York Board of Trade; H. G. Zervas, Lewiston Bleachery.

Status of Work on Electrical Definitions

Since the publication in pamphlet form in August, 1932, of the first general report of the Sectional Committee on Definitions of Electrical Terms (C42), the time of the seventeen subcommittees has been devoted entirely to the consideration of the hundreds of communications received outlining suggested revisions and additions. These revisions have varied in nature from a demand that the entire nomenclature dealing with the electrical and magnetic units be revamped down through disagreements in wording often based on commercial considerations; suggestions that it should be possible to write certain general definitions in a way to eliminate several now in existence covering widely divergent applications of the same terms; coordinating suggestions, which have proved readily acceptable; editorial and topographical revisions.

Of the sixteen reports included in the printed report all have been subject to revision, except one, that on Illumination. All the revisions of other than an editorial or topographical nature have been distributed from time to time in mimeographed form to the entire sectional committee for approval under the sixty-day rule. The final date for the receipt of revisions on the last distribution is December 19, 1933. There has also been circulated the first report of the subcommittee on Switching Equipment. This was not included in the August, 1932 printed report. Another item of interest tending to show the difficult and ever expanding nature of the problem the sectional committee faces, is instanced in the formation of a new subcommittee on Electronics under the chairmanship of W. Wilson, of the Bell Telephone Laboratories. This group will not only prepare definitions in the electronics field, but will also attempt the development of a single acceptable nomenclature for electron tubes in use in the industrial and radio fields. If success crowns this latter effort it will eliminate the confusion now existent due to multiplicity of names in use for identical pieces of apparatus.

At the present time it seems likely that a meeting of the Executive Committee of the sectional committee will be called during January, 1934, to consider the next step in the procedure toward eventually obtaining for the sectional committee's work approval as American Standard. Of course, even after agreement is reached on the various subcommittee reports, an immense amount of work of an editorial nature will be necessary.

H. E. FARRER, *Secretary*
Sectional Committee on Definitions of Electrical Terms

Simplified Practice Recommendation for Glass Containers

The revised Simplified Practice Recommendation R91-32, covering glass containers for preserves, jellies, and apple butter, is now available in printed form, according to an announcement of the Division of Simplified Practice of the National Bureau of Standards. Copies can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the American Standards Association, for five cents each.

This simplified practice recommendation was originally formulated by the industry in 1928. It is expected that by the inclusion of the 48-ounce jar for preserves, in the new schedule, the recommendation will prove of more value to the industry.

The revised program limits the stock sizes, based on avoirdupois weight of the food content of glass containers for preserves, to nine; jellies, to seven; and apple butter, to four.

Technical Committees Report on Classification of Coals

by

A. C. Fieldner,[1] *Chairman*
Sectional Committee on
Classification of Coals

The technical committees of the American Standards Association Sectional Committee on Classification of Coals (M20) met at the Experiment Station of the U. S. Bureau of Mines, at Pittsburgh, Pennsylvania, on October 26. It was the best attended and most enthusiastic meeting that these committees have held since their organization. Six years of data collecting and research culminated in the formulation of a tentative system for the classification of coals according to the various ranks, ranging from lignite to anthracite and also a system for classification according to quality and grade.

The Subcommittee on Boundary Lines for Coal Classification presented a report in which coals were subdivided. The ranks of coal are classified into four groups; namely, anthracite, bituminous, sub-bituminous and lignite. The anthracite group consists of graphitic anthracite, normal anthracite, and semi-anthracite. The bituminous group consists of low volatile bituminite, medium volatile bituminite, high volatile bituminite A, high volatile bituminite B, and high volatile bituminite C. The sub-bituminous group consists of sub-bituminite A, sub-bituminite B and sub-bituminite C. The lignitic group consists of lignite and brown coal.

The boundary lines between the different classes of anthracite and between the low-moisture bituminous coals are defined by the percentage of fixed carbon on a dry mineral matter free basis. The boundary lines between the classes of high-moisture bituminous coal and sub-bituminous coal and lignite are defined by the Btu value on a moist mineral matter free basis; "moist" meaning that the coal contains the normal bed-moisture but not any extraneous or surface moisture.

Tables and charts were presented by members of the U. S. Bureau of Mines, U. S. Geological Survey, the State Geological Survey of Illinois, and the Survey Branch of the Canadian Department of Mines showing how the various North American coals fitted into the proposed system of classification. These charts represent several years of intensive work by these organizations.

The names given to the different classes of coal were recommended by the Committee on Nomenclature. This committee decided to use common names as far as possible but they believe that it is more logical to give each class a substantive name such as has been the practice with respect to anthracite and lignite. Therefore, the bituminous and sub-bituminous classes have been given an "ite" ending.

The Subcommittee on Methods of Analysis and Tests to be Used in Coal Classification submitted a comprehensive report defining the various tests that are to be used in the classification of coal. In general the methods of the American Society for Testing Materials are recommended for sampling and analysis. However, two new tests not yet standardized by the Society were recommended by the subcommittee. These are a test for the agglutinating value of coal and an accelerated test for determining weathering or slacking properties of coal. The subcommittee also recommended that the mineral matter free values used in classifying coal be calculated either by the Parr Unit coal formula or an approximation formula developed by the subcommittee.

Work was started at the Pittsburgh meeting in classifying coal according to grades, depending upon the percentages of ash, sulphur, fusibility of ash, and friability, since such classification, by grade, is important in the operation of codes in the coal industry.

The Technical Committee on Classification hopes to present a report including a tentative system of classification and the methods of determining the classes at the next annual meeting of the sectional committee which will be held in New York, in February, at the time of the annual meeting of the American Institute of Mining and Metallurgical Engineers.

[1] Chief Engineer, Experiment Stations Division, U. S. Bureau of Mines, Washington, D. C.

Electrical World Urges Work on Consumer Standards

Commenting on the broadened activities of the American Standards Association, the "Electrical World" *says editorially in its issue of December 16:*

"One of the first possibilities for use of ASA to benefit the electrical industry is to study the present situation with respect to the quality standardization actions and proposals for electrical appliances and wiring devices. This quality movement has grown in importance through the action of retail stores, utilities, and individual developments such as the recent improved cord program, and yet no industry-consumer organization has been established to study the whole problem and to plan to develop as well as to control quality standardization.

"It is a logical procedure for the ASA to act upon this situation. A sectional committee of manufacturers, utilities, retailers, inspectors, and consumers would represent all interests involved. If competent and experienced men were selected they could first compile facts and opinions and make a report that would serve as a guide to the industry. If some degree of quality standardization is recommended after this study a plan of procedure then could be agreed upon. The ultimate action might well involve specification writing and supervisory authority on inspection and tests and also the correlation of the valid jurisdiction of the Underwriters on fire and casualty aspects with the broader standardization program.

"The industry and the ASA have an opportunity to act constructively and it is to be hoped that one of the first endeavors of the ASA will be to act wisely and impartially on quality standardization possibilities for consumer products, electrical and non-electrical. This new movement is here, it is developing rapidly and must be faced. The ASA appears to offer the logical organization to consider it and to act as the agency in which both industry and consumers can measure its possibilities and take action that would be stamped with authority, completeness, and an impartial consideration of all interests involved."

German Standards for Ferrous and Non-Ferrous Metals

The seventh edition of the Handbook on Materials Specifications (steel, iron, non-ferrous metals) published by the German national standardizing body, Deutscher Normenausschuss, has been received by the American Standards Association. It is a compilation of German national standards concerning quality specifications, methods of test, and dimensional standards for metal products approved as national standards by the German body. The main sections deal with the following subjects: methods of testing; steel and iron (technical purchase specifications); rolled steel products and drawn steel products; non-ferrous metals; and semi-finished non-ferrous products.

A copy of the book is available as a loan to ASA Company Members or copies may be ordered through the office of the American Standards Association at $1.25 each. The book is published in German.

Symposium on Office Equipment

The third section of a symposium on the purchase of office equipment, covering desks, chairs, filing cabinets, safes, shelving, visible record equipment, machine and filing supplies, was published in the August issue of *Pacific Purchasor*. The first section, published in the issue of March, 1932, covered addressing, duplicating, mailing, and weighing machines; the second section on typewriters, dictating, adding, bookkeeping and tabulating machines, copy holders, and check protectors, was published in December, 1932.

These three sections on office equipment have been published as part of a series on Valuable Data for Buyers covering commodities and equipment which has appeared in *Pacific Purchasor* over a period of some months.

Copies of *Pacific Purchasor* can be obtained at 20 cents each from the Purchasing Agents' Association of Northern California, 433 California Street, San Francisco, or from the American Standards Association.

Simplified Practice Recommendation on Packaging Motor Parts

Simplified Practice Recommendation R145-33, covering packaging of electric railway motor and controller parts is now available in printed form, according to an announcement by the Division of Simplified Practice of the National Bureau of Standards. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., or through the office of the American Standards Association, at five cents per copy.